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IN THE U.S. PATENT AND TRADEMARK OFFICE

Inventor	Patrick REINHOLD et al	
Patent App.	10/726,817	
Filed	2 December 2003	Conf. No. 4112
For	CONTINUOUS PROCESS FOR PRODUCTION OF STEEL PART WITH REGIONS OF DIFFERENT DUCTILITY	
Art Unit	1742	Examiner Roe, J

Hon. Commissioner of Patents
Box 1450
Alexandria, VA 22313-1450

Appealed 07-Aug-07

APPEAL BRIEF UNDER 37 CFR 41.37

Now come appellants by their duly authorized attorney and submit their brief under the provisions of 37 CFR 41.37.

I. REAL PARTY IN INTEREST

The real party in interest here is the assignee, Benteler Automobiltechnik GmbH, a limited-liability company of Germany having a place of business at An der Talle 27-31, D-33102 Paderborn, Germany by an assignment of 02 December 2003 recorded at frame 0484, reel 014761.

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II. RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

III. STATUS OF CLAIMS

The case contains six claims, numbered 9 to 13, with claim 9 independent and claims 10-13 directly or indirectly dependent on claim 9. The claims currently stand as amended on/about 30 January 2007.

Attached as a Claim Appendix is a clean version of the claims as they now stand.

IV. STATUS OF AMENDMENTS AFTER FINAL ACTION

A THIRD AMENDMENT-AFTER FINAL ACTION was filed on/about 09 July 2007 in response to the final office action mailed 09 April 2007. This amendment made no changes to the specification or claims and only argued patentability of the existing claims with regard to newly cited art. This amendment was considered but did not change the rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

It has been determined that certain metal parts, for example B-columns for motor vehicles, can perform extremely well and be counted on to have a long service life if they are of different malleabilities in certain regions. One end (3a in FIG. 2; spec. page 8, line 12) of the piece (3 in FIG. 2; spec. page 8, line 15) may need to deform, where the other end (3b in FIG. 2; spec. page 8, line 13) should be of great strength, even if it becomes somewhat brittle. It is however very difficult to mass-produce such workpieces 3. The entire workpiece 3 is normally first heated to the maximum temperature for a certain type of heat treatment and the part 3b of the workpiece 3 that should retain these properties is insulated, after which the workpiece 3 is heated up enough to heat treat the uninsulated parts 3a for a while at a much higher temperature. Such a process normally cannot be broken down to assembly-line use, but must normally be executed in a laborious batch operation.

The instant invention solves this problem by subdividing a heat-treatment furnace (1 in FIG. 1; spec. page 8, line 10) with a partition (5 and 5a in FIG. 2; spec. page 9, lines 2-3) extending longitudinally parallel to the movement direction (horizontally in the plane of the view of FIG. 1 but perpendicular to the plane of the view in FIGS. 2-4) of the workpieces 3. This partition 5, 5a subdivides the furnace 1 into two longitudinally extending adjacent zones (4c and 4d in FIG. 2; spec. page 9, lines 7 and 8), one of

which is heated to a "substantially higher" (claim 1, lines 7-8) than the other. The workpieces 3 are "conveyed longitudinally through the furnace 1 generally parallel to the partition 5, 5a with a region (7b in FIG. 2; spec. page 9, line 8) of the workpiece 3 moving exclusively through the one zone 4c and another region (7a in FIG. 2; spec. page 9, line 7) of the workpiece 3 moving exclusively through the other 4d of the zones such that the regions are heated to different temperatures" (claim 1, lines 9-14). Each part 7a or 7b of the workpiece 7 is thus "exclusively" treated in a respective zone of the furnace 1 as it passes through. In practice if the gap through which the workpiece passes is made as short as possible, it is possible to heat treat adjacent parts of the workpiece at greatly different temperatures, in a continuous process that is very inexpensive to implement.

More specifically according to the invention the partition 5, 5a comprises upper and lower parts (5 and 5a in FIG. 2; spec. page 9, lines 2-3) defining a "transversely open gap through which the transport means extends." (claim 10, lines 6 and 7; 6 in FIG. 2; spec. page 9, line 5). In fact the upper partition 5a may be transversely shiftable (see broken-line positions 19 and 19a in FIG. 4) to change the relative size of the two heating zones 4c and 4d as well as the position of the gap through which the workpieces 3 (7 in FIG. 2; spec. page 9, line 5) on the belt pass (claim 11) and there might be multiple lower partitions 5 and a single movable upper partition 5a (claim 12). It is also possible

for there to be a middle partition (9a in FIG. 3; spec. page 9, line 15) moving through the furnace 1 with the conveyor (claim 13).

The invention is simple and there is no confusion in the claims, specification, or drawing.

VI. GROUNDS OF REJECTION

The claims all stand rejected under §103(a) in view of US 1,949,716 of Harsch and a part of the ASM Handbook Volume 1. More specifically the Advisory action of 16 July 2007 stated that

> "Harsch ('716) discloses a longitudinally extending (pg. 1, col. 1, lines 1-3 and Figure 8); a longitudinally extending partition (page 2, col. 1, lines 49-77 and Figure 2); means for heating the zones at different temperatures (pg. 1, col. 1, lines 14-19 and pg. 3, col. 3, lines 93-107); and a transport means for conveying the workpiece through the furnace (pg. 1, col. 1, lines 65-82 and Figure 8). The structure of the apparatus disclosed by Harsch ('716) would be capable of performing the intended use as claimed in the instant invention and therefore meets the claims."

VII. ARGUMENTS

Appellant admits that the ASM Handbook Volume 1 describes the many benefits of steel, one of which is adjusting its properties according to needs. There is however, absolutely nothing cited from the reference suggesting differentially tempering a single piece of steel by passing it through a partitioned furnace according to the invention.

Harsch does not disclose the structure defined in the claims. Instead (exactly as in the previously applied but since dropped reference, US 3,716,222 of Anderson) in Harsch the workpiece-treating part of the furnace is subdivided longitudinally into a succession of transversely extending and longitudinally succeeding regions, and every region of every workpiece passes through every zone. There are no longitudinally extending zones through which respective regions of the workpieces move, neither is there any way to say like the main claim under appeal here that one region of the workpiece moves "exclusively" through one zone while another region moves "exclusively" through the other zone.

The reason for this is best stated in the second full paragraph of Harsch (column 1, lines 4-10):

> In accordance with my invention, the atmosphere in a furnace is forcibly circulated in a path intercepting the path of movement of the load through the furnace to obtain uniformity of temperature for any given section

across the load, and more particularly, also to transfer heat by convection to the load.

Thus Harsh is clearly not interested in differential tempering, like the instant invention and is aimed merely at a furnace for the mass production of workpieces having "uniform" treatment. Harsh is aimed at a system where "the load is raised to the desired temperature in shorter time with uniformity of temperature over each and every cross-section of the load." (column 1, lines 91-100). The goal of Harsh is different, which explains the different structure.

It is true that Harsh has, as shown in FIGS. 8 and 9, longitudinally extending partitions 35 that form, outside the succession of longitudinally succeeding zones formed by the partitions 25 and 25a longitudinally extending zones. There is however no conveyor in this longitudinally extending chamber nor is the workpiece ever here. Thus Harsh has a different transport system that moves the workpiece differently.

It is apparently the examiner's contention that it would be obvious to modify Harsh so that it complies with the instant invention as defined, for example, in claim 9. To do this it would be necessary to

1. Form a longitudinally extending gap in one of the partitions 35 (FIG. 9).
2. Laterally extend the conveyor so that it also runs in the side chamber.

3. Provide a different loading apparatus so workpieces could be oriented with one part to one side of the rebuilt partition and one side to the other.

4. Eliminate the cross-wise partitions 25 and 25a.

The only place a suggestion to do this could possibly come from is the instant application. In face the examiner's above-cited statement that the "structure of the apparatus disclosed by Harsch ('716) would be capable of performing the intended use as claimed in the instant invention" would only be true to someone with eyes taught by the instant invention. Making the necessary modifications to the Harsch system so that it would meet the claims of this application would destroy the benefits of the system invented by Harsch.

Harsch is aimed at a system of producing workpieces that are uniformly treated. This word uniformity recurs all through the Harsch disclosure and is clearly critical. To this end the workpieces being treated, "metal objects, such as gears, shafts, valves and the like" (column 1, lines 65-66) are just dumped at the upstream end of the conveyor moving longitudinally through succession of treatment zones, and its orientation as it moves through is irrelevant. Each workpiece is fully treated in all its parts in every chamber. This is what Harsch is trying to do, and piercing the outer walls to do the opposite thing would not be obvious. To simply say that a person taught by the instant disclosure would know how to modify the system of Harsch to achieve

the goals of the instant invention is probably true, but that is not how rejections are made.

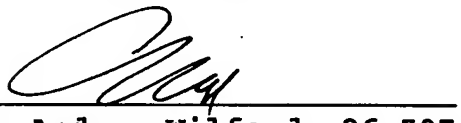
The rejection must be based on something in the art. Nothing in the art suggests subdividing a furnace workpiece-treatment chamber into two longitudinally adjacent zones and then passing a workpiece longitudinally through the furnace with one part of the workpiece always exclusively in one zone and another part of the workpiece always exclusively in the other zone. No such art can be found or cited, so that the §103 rejection must fall.

CONCLUSION

The rejection is based on hindsight. Nothing in the art suggests the modifications that have to be done to the structure

shown in the art so that it meets the claims in the case. The claims are clearly allowable.

Respectfully submitted,
K.F. Ross P.C.



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Enclosure: PTO-2038 for appeal fee
Claim Appendix
Evidence Appendix
Related Proceedings Appendix

VIII. CLAIM APPENDIX

9. (previously presented) An apparatus for heat-treating a steel workpiece, the apparatus comprising:

a longitudinally extending furnace;

a longitudinally extending partition subdividing an interior of the furnace into two longitudinally extending and transversely adjacent zones;

means for heating one of the zones to a substantially higher treatment temperature than the other of the zones; and

transport means for conveying the workpiece longitudinally through the furnace generally parallel to the partition with a region of the workpiece moving exclusively through the one zone and another region of the workpiece moving exclusively through the other of the zones such that the regions are heated to different temperatures.

10. (previously presented) The heat-treatment apparatus defined in claim 9 wherein the partition includes a longitudinally extending upper partition above the transport means and a longitudinally extending lower partition below the transport means and vertically aligned with the upper partition, the upper and

lower partitions defining a transversely open gap through which the transport means extends.

11. (previously presented) The heat-treatment apparatus defined in claim 10 wherein at least one of the upper and lower partitions is displaceable transversely through a plurality of different transversely offset positions.

12. (original) The heat-treatment apparatus defined in claim 11 wherein there are a plurality of the lower partitions transversely offset from each other and the upper partition is displaceable transversely through positions aligned with each of the lower partitions.

13. (previously presented) The heat-treatment apparatus defined in claim 12 wherein the partition includes

a middle longitudinally extending partition aligned vertically between the upper and lower partitions, the transport means displacing the middle partition through the furnace with the workpiece.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.